

## DETENTION OCCUPANCY PLAN CORRECTION LIST

Plans have been reviewed for compliance with the 1999 Standard Building Code (SBC), 1997 Standard Mechanical Code (SMC), 2003 National Fire Codes (NFPA Standards), 2003 NFPA 101 Life Safety Code, and the 1974 State Public Building Accessibility Act (2002 North Carolina Accessibility Code with the 2004 Amendments). The following list does not necessarily include all deficiencies. See additional items on the cover sheet.

**PLEASE NOTE:** Listed items require correction by revised plans, addenda, field orders, or change orders before plans can be approved for construction. Answers in letter form are not acceptable. **Starting construction before plans approval may be considered as just cause, by the State, to issue a stop work order. [Rule 0780-2-3-.02(1)]**

### I. PROCEDURES

- \*1. Provide two copies of plans and one copy of specifications sealed (with signature and date) by a Tennessee registrant in accordance with the Architects and Engineers Licensing Law Rules. [Rule 0780-2-3-.03 and A&E Rule 0120-2-.08(3)] If revisions are submitted, two copies are required.
- \*2. Provide a second set of sealed final plans and revisions for the job site set. [Rule 0780]
- 3. Buildings must be designed to the minimum State of Tennessee adopted codes and standards.

Provide the following code information on the cover sheet of the plans for new and existing buildings:

- A. SBCCI Standard Building Code, 1999 edition, including SBCCI Standard Gas Code, 1999 edition, and SBCCI Standard Mechanical Code, 1997 edition
  - B. Uniform Fire Code (NFPA 1), 2003 edition, including each reference in NFPA 1, Chapter 2 (excluding NFPA 5000), published by the National Fire Protection Association. Each reference in NFPA 1 Uniform Fire Code, Chapter 2 to an NFPA code or standard shall be deemed to be the edition printed in the National Fire Codes, 2003 edition
  - C. 1974 State Public Building Accessibility Act (2002 North Carolina Accessibility Code with the 2004 Amendments)
  - D. Occupancy Group per Chapter 6, NFPA 101, 2003 edition
  - E. Identify whether there is a proposed change of occupancy for this project. Show previous and proposed occupancies
  - F. Construction Type, protected or unprotected, sprinklered or unsprinklered per Chapter 6, 1999 SBC
  - G. Number of stories, and/or height of building
  - H. Area of building according to SBC Table 500 for new and existing. Show building area increase calculations per SBC 503.3
- 4. Provide a summary statement explaining the project's Scope of Work on the design drawing that shows the project's codes analysis.

5. Provide a Life Safety Plan showing: Occupant load with occupant load factors for each space based on its intended use; number of occupants using exits according to design as compared to exit capacity of door or stair (which ever is more restrictive); travel distances; and accessible means of egress to a public way identifying location of any area of refuge, required exterior exit doors, exit stair landings, and any elevator for unsprinklered buildings or for sprinklered buildings show the access to the public way from two remote exits of the building. Show all fire rated wall limits for occupancy separations, building compartmentation walls, exit access corridors, stair exits, elevator shafts, mechanical system shafts, and separations from hazards such as storage rooms (50 sf or larger), janitor closets, gas furnace rooms, and laboratories.
- \*6. Complete the Plans Review Submittal Form (PRSF) and remit the required fee. [Rule 0780]
7. The fee has been calculated incorrectly. Balance due is \_\_\_\_\_. We are refunding \_\_\_\_\_. The refund process takes approximately 6 to 8 weeks.
8. Information on the plans review submittal form is incorrect as follows:  
\_\_\_\_\_
9. Code deficiencies cited in the inspection report (dated/requested) \_\_\_\_\_ must be addressed.
- \*10. Provide the following flow test data on the plans for fire hydrant(s) used to meet the 500 feet or less hose lay requirement in accordance with the local authority having jurisdiction. [2002 NFPA 24 7.2.1] Show flow test data next to the hydrant tested. Flow test must have been conducted within the last six months.
  - A. Static pressure \_\_\_\_\_ psi  
Residual pressure \_\_\_\_\_ psi (20 psi minimum)  
Flow \_\_\_\_\_ gpm (500-gpm minimum)  
[Department of Environment & Conservation Rules and Regulations 1200-5-1-.17 paragraph 18]
  - B. Party responsible for taking test (name and address)
  - C. Date test taken: \_\_\_\_\_ Time test taken: \_\_\_\_ a.m./p.m.
  - D. Elevation of test hydrant: \_\_\_\_\_
11. Provide hydraulic design values for any new proposed fire hydrant(s) or water main(s) that are not readily available near the building site. Provide theoretical water supply hydraulic flow (gpm) and residual pressure (psi) design values with preliminary design calculations on the plans furnished by the engineer of record. Show the hydraulic design values next to any proposed fire hydrant(s) (minimum 500 gpm at 20 psi) or for sprinklered buildings, at the base of the sprinkler system riser(s) (required gpm and pressure for the required sprinkler supply vs. demand). When the fire hydrant(s) are in service, provide a copy of the flow test to the Deputy State Fire Marshal inspector and State Plans Reviewer for the project.
12. Prior to any approval being granted, items with an asterisk (\*) must be resolved.

## 13. One or more of the following forms are enclosed:

- |   |                            |
|---|----------------------------|
| A. Plans Review Submittal Form                | G. Standpipe Design Intent |
| B. Accessibility Correction List              | H. Fire Pump Design Intent |
| C. Accessible Means of Egress Correction List | I. Tank                    |
| D. High Rise Correction List                  | J. Other _____             |
| E. Hood and Duct Design Intent                |                            |
| F. Sprinkler Design Intent NFPA 13            |                            |

14. **NOTE: In order to expedite processing of this project please refer to "TFM NUMBER" on transmittal letter when submitting any correspondence, plans, and specifications.****II. GENERAL**

- \*1. Identify use of rooms and spaces.
- \*2. Provide design live load values on plans for wind, roof, floor, stairs, guard and hand railings, seismic per SBC 1607.1.2, etc. [SBC Chapter 16] For existing buildings that have not been reviewed and approved by our office, provide "as built" plans from a Tennessee licensed structural engineer or an evaluation report sealed, signed, and dated from a Tennessee licensed structural engineer. The evaluation report must show the design live loads for wind, roof, floors, stairs guard, hand railings, and seismic.
- 3. Provide door and door hardware schedule.
- 4. Provide glazing schedule. Specify size and type of glazing.
- 5. Provide interior finish schedule.
- 6. Provide a complete legend for \_\_\_\_\_.
- 7. Provide legend for all fire rated wall enclosures to identify specific fire ratings and their limits (i.e., smoke partitions or barriers, 30-minute, one, two, and four-hour fire ratings).
- 8. Show wall fire ratings on structural, mechanical, plumbing, electrical, and fire protection drawings.
- 9. Provide two copies of structural shop drawings for the pre-manufactured building to include the manufacturer's name and model number or other designation. This is needed for SBCCI pre-compliance verification. Otherwise, send two copies of structural drawings sealed by a structural engineer registered by the State of Tennessee. Show seismic information per SBC 1607.1.2. **The shop drawings must be approved prior to erecting steel.**
- 10. When any floor surface for human occupancy is more than 75 feet above the lowest level of fire department vehicle access, the building must comply with the **HIGH RISE CORRECTION LIST**. [SBC 412.1.1]

11. **FIRE STOPPING** Specify test number, hourly rating, and provide detail(s) in their entirety which include application instructions, material specifications and design illustrations without modification or manipulation directly on plans of current U.L. (or other approved third party nationally recognized testing laboratory) tested systems for each size and type of penetrating object such as metallic and nonmetallic electrical, plumbing, HVAC piping and ductwork, fire protection piping, electrical wiring, or conduit through fire resistive assemblies SBC 705.4 and NFPA 101 8.3.5. The details must be provided directly in the plan set and not in Architectural Supplemental Instruction (ASI), addenda, or within the specifications or project manual. Provide plumbing details for toilet, shower, and tub penetrations at 1-hour fire rated floor assemblies and plumbing penetrations within walls when penetrating 1-hour rated floor assemblies. UL permits the free duplication and inclusion for design professionals in their designs (see "Important Information For Users Of This Directory, Use of This Directory" in Volume 1 of the most recent printed Fire Resistance Directory - or - at the bottom of each "record" (i.e., UL system number) on the online certification directory available <http://www.ul.com> for UL's terms and conditions of use).
12. Pipes, raceways, and cable trays (regardless of size) penetrating **fire walls** having a required 3-hour or greater fire resistance rating shall be positioned to pass through the wall no more than 3 ft above the finished floor level. A steel sleeve of a size to allow an approximate 1-in. clearance between the sleeve and the pipe or raceway shall be provided for each pipe or raceway. [2000 NFPA 221 6.1]
13. **WALLS, CEILINGS, FLOOR/CEILING AND ROOF ASSEMBLIES** Show what UL or other assembly number is being used for the fire-rated roof/ceiling, floor/ceiling, and wall assemblies. [SBC 701.2] Specify that all component parts comply with tested assemblies. Provide detail(s) in their entirety which include design illustrations and material specifications without modification or manipulation directly on plans of current U.L. (or other approved third party nationally recognized testing laboratory) tested assembly. The details must be provided directly in the plan set and not in Architectural Supplemental Instruction (ASI), addenda, or within the specifications or project manual. UL permits the free duplication and inclusion for design professionals in their designs (see "Important Information For Users Of This Directory, Use of This Directory" in Volume 1 of the most recent printed Fire Resistance Directory - or - at the bottom of each "record" (i.e., UL system number) on the online certification directory available <http://www.ul.com> for UL's terms and conditions of use).
14. **JOINT SYSTEMS** Provide design number, hourly rating, and detail(s) in their entirety which include design illustrations, material specifications without modification or manipulation directly on plans of current U.L. (or other approved third party nationally recognized testing laboratory) tested assembly for fire rated assembly connections such as (wall-to-wall, floor-to-floor, floor-to-wall, head-of-wall, bottom-of-wall, joints) where not inherently tight. The details must be provided directly in the plan set and not in Architectural Supplemental Instruction (ASI), addenda, or within the specifications or project manual. UL permits the free duplication and inclusion for design professionals in their designs (see "Important Information For Users Of This Directory, Use of This Directory" in Volume 1 of the most recent printed Fire Resistance Directory - or - at the bottom of each "record" (i.e., UL system number) on the online certification directory available <http://www.ul.com> for UL's terms and conditions of use). \_

15. CURTAIN WALL JOINT SYSTEMS Provide design number, hourly rating, and detail (s) in their entirety which include design illustrations, material specifications without modification or manipulation directly on plans of current U.L. (or other approved third party nationally recognized testing laboratory) tested assembly for perimeter fire containment systems (unrated curtain wall-to-rated floors assemblies) where not inherently tight. Perimeter fire containment systems provide a means to ensure continuity of vertical fire rated separation at perimeter walls with horizontal fire rated assemblies and safing systems. The details must be provided directly in the plan set and not in Architectural Supplemental Instruction (ASI), addenda, or within the specifications or project manual. UL permits the free duplication and inclusion for design professionals in their designs (see "Important Information For Users Of This Directory, Use of This Directory" in Volume 1 of the most recent printed Fire Resistance Directory - or - at the bottom of each "record" (i.e., UL system number) on the online certification directory available <http://www.ul.com> for UL's terms and conditions of use).
16. Provide complete description of locking equipment so we can determine use condition.
17. From information provided we have determined this to be use condition \_\_\_\_\_. [NFPA 101 22.1.4.1]
18. Provide a reflected ceiling plan showing lights, diffusers, sprinkler heads, smoke detectors, etc.
19. Provide elevator key lock box mounted at 72" AFF to center of the box by each bank of elevators for all University of Tennessee and/or Tennessee Board of Regents residential occupancies containing elevators. The lock box must meet the requirements as specified by the Tennessee Department of Labor and Workforce Development (contact the Division of Boiler & Elevator, Mines, Labor Standards, and Research & Statistics for specifications for more details) and be operated by a common key. Provide mounting details and specifications in plans. [TCA 49-7-136(a)]
20. Provide elevator key lock box mounted at 72" AFF to center of the box by each bank of elevators for all state-owned public buildings under the Department of General Services' control containing elevators. The lock box must meet the requirements as specified by the Tennessee Department of Labor and Workforce Development (contact the Division of Boiler & Elevator, Mines, Labor Standards, and Research & Statistics for specifications for more details) and be operated by a common key. Provide mounting details and specifications in plans. [TCA 4-3-1114(a)]

### III. SITE

- \*1. Show location and footprint of all existing structures, property lines, grade elevations, water mains and other utilities, fire hydrants, fire department access and all ingress/egress to public ways. Include size and location of LP-Gas storage tanks (2001 NFPA 58) and any other above ground storage tanks (2000 NFPA 30 and 30A).
2. Fire department access must be 20 feet wide with a 13 feet 6 inches minimum vertical clearance and a dead end cannot exceed 150 feet unless an approved turnaround radius is provided. [Office Policy and 2003 NFPA 1 18.2] The fire department access road must be within 150 feet of any exterior wall of a building or within 450 feet for sprinklered buildings. [2003 NFPA 1 18.2.2.3 and .5]

3. A fire department access road shall be provided so as to extend to within 50 feet of a single exterior door providing access to the interior of the building. [2003 NFPA 1 18.2.2.2]
- \*4. Fire hydrants must be provided so that any portion of the building's exterior is within 500 feet hose lay of a hydrant measured along vehicle access route. [Office Policy and 2002 NFPA 24 7.2] Check with local code authorities as some jurisdictions require closer spacing.
5. Fire hydrants must have at least a six-inch connection with the main. [2002 NFPA 24 7.1.1]
6. Fire hydrants must be properly supported. [2002 NFPA 24 7.3]
7. Fire hydrant locations for average conditions must be installed at least 40 feet from the building to be protected. [2002 NFPA 24 7.2.3]
8. Fire service mains must not be routed under buildings, unless special protection is provided. [2002 NFPA 24 10.6]
- \*9. Where underground water mains and hydrants are to be provided, they must be installed, completed, and in service prior to construction work. [2003 NFPA 1 16.4.3.1.3 and 2000 NFPA 241 8.7.2.3]
10. Open space for refuge must allow all inmates to be at least 50 feet from buildings at 15 square feet per person or it cannot be considered an exit. [NFPA 101 22.2.7.2]

#### IV. **CONSTRUCTION**

- \*1. Building exceeds allowable area/number of stories/height for this type of construction and open space. [SBC Table 500] Sprinklered buildings must comply with 2002 NFPA 13 to receive allowable building code height, area, and number of stories. [SBC Table 500, Footnotes h and j]
- \*2. Firewall must be four-hour fire rated and must be constructed in such a way that the wall will remain standing after the collapse of the structure on either side. [SBC Table 600, Table 705.1.2, 704.5, and Definition 202] Wall must extend minimum three feet above combustible roof. The firewall must extend not less than 18 inches past any combustible projection or extension. Project's structural engineer must state **on the drawings** that. . . "This wall is a four hour fire resistant wall which extends continuously from the foundation to (noncombustible) or through (combustible) the roof, with sufficient structural stability under fire conditions to allow collapse of the construction on either side without collapse of the wall." Provide details showing how wall is structurally independent at roof.
3. Show on foundation plans and roof details the location and limits of all four-hour free standing firewalls.
4. Columns, floors, roofs, exterior and interior (bearing and non-bearing) walls, and girders must be protected in accordance with SBC Table 600 for Type \_\_\_\_\_ construction.
5. Show assumed property line between buildings and provide protection of facing walls and openings as per SBC Table 600 and SBC 705.1.1.
6. Construction Type I and II partitions must be constructed of noncombustible materials or of fire retardant treated wood. [SBC 609.2.1]

7. Foam plastic roof insulation must be separated from the interior of the building by a thermal barrier (SBC 2603.5), unless it complies with FM 4450 or UL 1256.
8. Show draft stopping of the attic every 9000 square feet if sprinklered and 3000 square feet if unsprinklered for Type V and VI construction. Specify material to be used. [SBC 2305.2.3 and 2305.2.6]
9. Exterior and interior walls must be fireblocked at each floor, ceiling, and roof with an approved noncombustible material tested for this purpose. [SBC 705.3]
10. Openings within 15 feet of a property line must be equipped with opening protectives. [SBC 705.1.1]
11. Provide attic access openings (minimum 22 inches by 36 inches) and attic ventilation within each draftstop area. [SBC 2309.6 and 2309.7]
12. Show \_\_\_\_\_ hour fire rated occupancy separation between \_\_\_\_\_ and \_\_\_\_\_ occupancies. [SBC 303.1, 704, and Table 704.1]
13. One-hour fire rated tenant separation is required horizontally and vertically. [SBC 704.3.1] Such separation must extend through usable crawl space to the ground below. [SBC 704.3.2]
14. Fire rated walls must extend tight against the underside of a roof or floor deck or to the underside of a rated smoke tight ceiling which has the same rating as the wall (e.g., two layers of 5/8 inch rated gypsum panels at the ceiling for tenant separation, one hour storage or janitor spaces, and one or two hour rated walls turned horizontally and anchored to the walls for corridors, elevator, stair, and breezeway ceilings). [NFPA 101 8.2.2.3] Provide details.
15. Equipment recessed in a fire rated wall must not decrease the rating of the wall. [SBC 705.5]
16. Glazing in one hour fire rated walls must be wired glass or other tested glazing material, in steel frames, no larger than 1296 square inches with no dimension greater than 54 inches. [SBC 705.1.3, Table 705.1.3.6, and 1999 NFPA 80 Chapter 13]
17. Skylights or glazing at an angle less than 15 degrees from the vertical must be glazed in compliance with SBC 2405.3.1, 2407, and 2604.
18. Skylights are not allowed within six feet of fire rated exterior walls. [SBC 2604.6.7]
19. Glazing in non-rated doors, sliding doors, storm doors, within 24 inches of doors, within 18 inches above finished floor, and exceeding 9 square feet within 36 inches of walking surface must be safety glazed, tempered, and pass the test requirements of CPSC 16-CFR, part 1201 and comply with ANSI Z97.1. [SBC 2405.1 and .2]
20. Glazing in fire rated doors must be wired glass or other tested glazing material, and must be limited in size according to door rating. [SBC 705.1.3.6]
21. A chair rail or other visual barrier is required at glass panels that may be mistaken for door. [NFPA 101 7.2.1.1.2]
22. Specify that fire rated doors must have fire rated frames, hardware, closers, and other rated accessories. [1999 NFPA 80 1-4 Definition of "Fire Door," 1999 NFPA 80 1-6.1, 2-4.7, and SBC 705.1.3]

23. Closers and positive latching hardware are required on fire rated doors and doors in smoke tight partitions or barriers. [NFPA 101 7.2.1.8, 1999 NFPA 80 3-4, and SBC 705.1.3.5]
24. Storage rooms 50 square foot or more, janitors closets, boiler rooms, furnace rooms, and all rooms used for storage of hazardous materials must be protected with 1-hour fire rated walls and 45-minute rated doors **or** must be protected by automatic sprinklers with smoke tight partitions and solid doors with self closers and positive latching hardware. [NFPA 101 22.3.2.1, 8.7.1, 8.7.1.2, 8.4, 9.7.1, and SBC Table 705.1.2]
25. Fuel fired water heaters with an aggregate input capacity that exceeds 200,000 BTU or 210°F or 120 gallons or rooms 50 square feet and greater must be enclosed in one-hour fire rated construction with 45-minute labeled door assembly **or** must be protected by automatic sprinklers with smoke tight partitions and solid doors with self closers and positive latching hardware. [NFPA 101 22.3.2.1, 8.7.1, 8.7.1.2, 8.4, 9.7.1, and SBC 704.1.3.3]
26. Provide two-hour separation from the existing, non-complying section. [NFPA 101 22.1.1.3]
27. A shaft that does not extend to or through the underside of the roof deck of the building must be enclosed at the top with construction of the same fire resistance as the top most floor protected by the shaft, but not less than the rating required for the shaft enclosure. [SBC 705.2.3.4.1] The rated shaft enclosure must be so constructed that it will provide the required rating from the center of the shaft to the adjacent space.
28. Elevators, shafts, and machine rooms must be enclosed with one/two hour fire resistance construction. [SBC Table 705.1.2 and NFPA 101 22.3.1]
29. Elevators and dumbwaiter hoistway doors and frames must be labeled. [1999 NFPA 80 8-1.3.1]
30. Show venting of elevator hoistways serving four stories or more. [SBC 3003.6]
31. Show detail of one/two hour construction where HVAC venting duct and metal chimney pass through fire rated floors and/or roofs. [SBC 705.2.2 and 2804.4.1]
32. Rubbish chutes, incinerators, and laundry chutes must comply with NFPA 101 9.5 and 1999 NFPA 82. [NFPA 101 22.5.4]



33. Atriums must comply with NFPA 101 8.6.7 and SBC Section 414. Entire building must be sprinklered with smoke control in atrium. [2000 NFPA 92A, 2000 NFPA 92B, and 2002 NFPA 204] See Section **VII. MECHANICAL, Item 31. of this list** for exhaust fan listing requirements so that they operate at the design conditions of smoke and fire.
- A. Define the smoke control system design concept (1) Smoke Control Systems (NFPA 92A), (2) Smoke Management Systems (NFPA 92B), or (3) Smoke and Heat Venting (NFPA 204).
  - B. Provide narrative of atrium system's measurable objectives on plans.
  - C. Provide narrative of testing protocol and express performance in terms of the measurements and observations that will be performed during final acceptance testing. Testing determines how well actual system performance delivers the design concept.
  - D. Doors may not be used in place of air intake louvers for a smoke management system.
  - E. Provide an engineering analysis demonstrating that the building is designed to keep the smoke layer interface above the highest unprotected opening **or** 72" above the highest floor level of exit access open to the atrium. [NFPA 101 8.6.7(5)]
  - F. An engineered smoke control system must be independently activated by the automatic sprinkler system and manual controls that are readily accessible to the fire department. [NFPA 101 8.6.7(6) and SBC 414.4.1]
  - G. Show volume of atrium on plans and include all spaces that are not separated from the atrium. [SBC 414.4.4]
  - H. The communicating space is separated from the remainder of the building by 1-hour fire rated walls and 20-minute fire rated opening protectives **or**
  - I. A glass wall forming a smoke barrier may be used in lieu of the fire separation wall in fully sprinklered buildings. [NFPA 101 8.6.7(1)(c), 8.5, and SBC 414.5] Glass walls (tempered and gasketed) are permitted when sprinkler protection is provided on each side of the wall spaced 72" on center and within 12" from the wall arranged so that the entire surface of the glass is wet upon activation of the sprinklers. Door openings in these walls must have positive latching hardware and door closer and 1/8" clearance for proper operation without door undercuts, louvers, or grilles. [NFPA 101 8.5.3.1]
34. Vertical opening connecting three stories or less (mini-atrium) must comply with NFPA 101 8.6.6 (1 through 8) and 22.3.1.
- A. The communicating space is not an exit. The communicating space may be used as an exit access to reach a lower floor level exterior exit door.
  - B. The communicating space is separated from the remainder of the building by 1-hour fire rated walls **or**
  - C. The communicating space is separated from the remainder of the building by a smoke barrier in fully sprinklered buildings. [NFPA 101 8.6.6(4)(a) and 8.5] Door openings in these walls must have positive latching hardware and door closer and 1/8" clearance for proper operation without door undercuts, louvers, or grilles. [NFPA 101 8.5.3.1]
  - D. As an Equivalency, complete automatic smoke detection systems with proper occupant notification may be substituted for the openness and unobstructedness required by 8.6.6(3) for awareness and early warning purposes. A SFMO Request for Equivalency form must be completed and submitted by registrant for approval.
  - E. Each occupant within the communicating space has access to not less than one exit without having to traverse another story within the communicating space. [NFPA 101 8.6.6(7)]
  - F. Each occupant not in the communicating space has access to not less than one exit without having to enter the communicating space. [NFPA 101 8.6.6(8)]

**V. MEANS OF EGRESS**

1. Provide accessible means of egress to a public way incorporating areas of refuge per SBC 1004.3 and NFPA 101 7.5.4. See attached **ACCESSIBLE MEANS OF EGRESS CORRECTION LIST**.
2. Travel distance to reach an exit must not exceed 150 feet in an unsprinklered building or 200 feet in a fully sprinklered building. [NFPA 101 22.2.6]
3. At least two exits, located remote from each other, must be accessible from each floor or fire compartment of the building. [NFPA 101 22.2.4 and SBC 1024.2.4]
4. When two exits are required from a building or area they must be separated by one-half /one-third if sprinklered throughout the diagonal dimension of the building or area served. [SBC 1004.1.4 and NFPA 101 7.5.1.3]
5. Stair enclosure must be one/two hour fire rated. [SBC Table 705.1.2 and NFPA 101 7.1.3.2] Exterior stairs must be separated from the interior of the building with the same rating required for interior stairs. [SBC 1006.2.4 and NFPA 101 7.2.2.6.3]
6. Exit stairwell doors must be 1/1½ hour fire rated and **additionally** must be rated so that the unexposed side does not exceed 450°F. [SBC 705.1.3.4 and NFPA 101 8.3.4]
7. Width of stairs must comply with SBC 1007.6, SBC Table 1004, and NFPA 101 7.3. Exits from an area of refuge in unsprinklered buildings must have a minimum 48 inches between handrails. [NFPA 101 7.2.12, 7.2.12.3, and SBC 1004.3.2.1]
8. Minimum headroom clearance in stair enclosures must be 6'-8". [NFPA 101 7.2.2.2.1 and SBC 1007.7]
9. Stair treads must be minimum 11 inches and risers must be maximum 7 inches but not less than 4 inches without square nosing and must be designed in accordance with NFPA 101 7.2.2.2.1, 7.2.2.3.4, SBC 1007.3.1, and NCAC 8.2.
10. Rise may not exceed 12 feet between floors or landings. [SBC 1007.4.1]
11. Changes in elevation of less than 21 inches in the means of egress must be by ramp or stair complying with NFPA 101 7.1.7. This includes handrails, 13-inch treads, and readily visible treads.
12. New Handrails shall be installed to provide a clearance of not less than 2¼" between the handrail and the wall to which it is fastened if wall is a rough surface such as cmu block and brick and 1½" clearance acceptable for smooth surfaces such as gypsum wallboard. [2003 NFPA 101 7.2.2.4.4.5 and A.7.2.2.4.4.5]
13. Handrails and guards must be in accordance with NFPA 101 7.2.2.4, SBC 1007.5.1, SBC 1015, and NCAC 8.3 such as 34" minimum to 38" maximum and 42" to top of handrails and guards; handrails on both side of stairs; 23" minimum handrail extension on wall side at bottom of stair; and four inch maximum diameter sphere for intermediate rails in guards. Guardrails are required on the open side of stairs 30 inches above floor surface. [NFPA 101 7.1.8 and 7.2.2.4]
14. Stairs serving upper floors must be separated by a barrier to prevent travel beyond the level of exit discharge. [SBC 1007.1.6 and NFPA 101 7.7.3]
15. One stair must extend to the roof in accordance with SBC 1008 for buildings four stories and greater in height.

16. Normally unoccupied spaces and hazardous areas may not open into an exit stairwell or exit passageway. [NFPA 101 7.1.3.2.1(5) and 7.2.2.5.3]
17. Elevators shall not be in a common enclosing shaft with a stairway. [SBC 3003.1.4]
18. All exits shall be permitted to discharge through the level of exit discharge provided that not more than 50% of the exits discharge into a single fire compartment separated from other compartments by construction having a minimum 1-hour fire resistance rating. [SBC 1010.3 and NFPA 101 22.2.7.4]
19. Exit stairways may discharge through the level of exit discharge or 50% into separate fire compartments. [NFPA 101 22.2.7.3]
20. Door swing may not reduce landing to less than one-half its required width. [NFPA 101 7.2.1.4.4 and SBC 1012.1.5]
21. Doors, windows, and openings within ten feet horizontal projection and extending vertically from the ground to a point ten feet above the topmost landing must be 45-minute fire protected. [SBC 1006.2.4, NFPA 101 7.2.2.6.3(4), and 7.2.2.6.4] And the stairs must be separated from the interior of the building by one hour construction. Interior stairs must be separated in accordance with SBC Table 705.1.2, 1006.1.3.2, NFPA 101 7.2.2.5.1, and 7.2.2.5.2.
22. Outside stairs, ramps and landings, other than existing stairs and stair landings, shall be designed to minimize water accumulation on their surfaces. [NFPA 101 7.2.2.6.5 and 7.2.5.6.2]
23. Exit access corridors must be protected as required by NFPA 101 Table 22.3.8 and SBC Table 409.2.15.
24. Aisles, corridors, and ramps required for access or exit must be at least four feet wide. [NFPA 101 22.2.3.2 and SBC Table 1004]
25. Dead ends in exits and exit access may not exceed 20 feet. [SBC 1004 and SBC 1005.2] Common path of travel may not exceed 75 feet.
26. The floor on both sides of any door must be substantially level and may not vary more than ½ inch for a distance at least equal to the width of the widest leaf. [NFPA 101 7.2.1.3 and SBC 1012.1.3]
27. Doors opening onto a corridor of minimum required width must not reduce the required corridor width to less than one half during its swing. [NFPA 101 7.2.1.4.4]
28. Each leaf of door in the means of egress must provide 32 inches clear opening and a minimum height of 6'-8", but in no case must any single door exceed 48 inches. [NFPA 101 7.2.1.2.4, SBC Table 1004, and 1012.1.1]
29. Doors serving 50 or more people and stairway doors must swing with the direction of exit travel. [SBC 1012.1.2, NFPA 101 7.2.1.4.2, and .3]
30. Doors in smoke barriers must have wire glass vision panels where the barrier crosses and exit access corridor. [SBC 409.1.2.4 and NFPA 101 22.3.7.10]
31. Smoke barriers (or horizontal exits, direct exits, or exits to an enclosed area of refuge) are required where there are more than 50 people per floor, where there are residents sleeping, to limit the number of residents in the compartment to 200, and to limit travel distance to 100 feet from any door or 150 feet from any point in a room. [SBC 409.2.14]

32. Two means of egress must be provided from boiler, incinerator, or furnace rooms which exceed 500 square feet and fuel fired equipment, which exceeds 400,000 BTU input capacity. [SBC 1005.1] Maximum distance of travel to an egress door must not exceed 50 feet. [SBC 1005.1 and NFPA 101 7.12]
33. Provide a door in the folding partition. [NFPA 101 7.2.1.12]
34. Show that power operated doors are capable of being manually opened to permit exit travel in the event of a power failure. [SBC 1012.2.1 and NFPA 101 7.2.1.9]
35. Door swinging in pairs and having a fire protection rating of more than 1½ hours shall have an overlapping astragal.
36. Doors swinging in pairs, where located within a means of egress, shall not be equipped with astragals that inhibit the free use of either leaf. These forces shall be applied at the latch stile to achieve the minimum required width.
37. Where there is an astragal or projecting latch bolt that prevents the inactive door of a pair of doors from closing and latching before the active door closes and latches, a coordinating device shall be used. A coordinating device shall not be required where each door closes and latches independent of the other door.
38. Astragals and coordinators are required on more than 1½-hour fire rated doors swinging in pairs. [1999 NFPA 80 2-4.7.1 and 3-4.2]
39. If an area has horizontal exits, adjacent areas must have exits to the outside. [NFPA 101 22.2.2.5 and SBC 1024.2.7.1]
40. Doors to resident sleeping rooms must be at least 28 inches in clear width. [NFPA 101 22.2.11.3 and SBC 1024.2.8.2]
41. Every sleeping room must have a door leading either directly to an exit access corridor or through an adjoining dayroom, either on that floor or on an adjacent level. [SBC 1024.2.5.1 and NFPA 101 22.2.5.1]
42. Exit requirements must be based on 120 square feet per person, using the area within the inside perimeter of exterior walls. [SBC Table 1003.1 and NFPA 101 22.1.7]
43. A sally port is permitted only if there is continuous, unobstructed passage through it during an emergency exit condition. [NFPA 101 22.2.5.4 and SBC 1024.2.5.6]
44. If exterior door locks are operated with a key, key must be available at all times, and the locks must be operable from both sides of door. [NFPA 101 22.2.11.6 and SBC 1024.2.9.3]
45. All power-operated sliding doors or power-operated locks for swinging doors must have a mechanical means operable from a remote location or by key and lock mechanism at the door to manually release locks and move sliding doors to fully open position. [NFPA 101 22.2.11.8 and SBC 1024.2.9.5]
46. Every assembly area shall have the occupant load posted in a conspicuous place near the main exit of the room. [SBC 403.1.2.2 and NFPA 101 12.7.8.3]

**VI. INTERIOR**

1. Interior finish of vertical exits and exit access must have a Class A flamespread rating in unsprinklered buildings per NFPA 101 22.3.3.2. See NFPA 101 10.2.3.4 and SBC 803.2 for classification definitions.
2. Interior finish of other areas must be Class C for restrained, not allowed in unsprinklered unrestrained, Class C for sprinklered unrestrained for 30 or less and Class B for four or more per room. [SBC 803.3]
3. Carpet on floors in corridors, stairs, and lobbies of unsprinklered buildings must withstand 0.22 watts/cm<sup>2</sup>, Radiant Panel Test (Class II). [SBC 803.8.2]
4. Carpet on walls and ceilings must be Class A and protected by automatic sprinklers. [SBC 803.5.2]

**VII. MECHANICAL**

1. Penetrations of stairwells such as steam lines, gas lines, water lines, electrical conduit, and duct are prohibited. Only sprinkler piping, standpipes, electrical conduit serving the stairwell and ductwork and other equipment necessary for stair pressurization are permitted. [SBC 1006.1.3.1, SMC 408.1, and NFPA 101 7.1.3.2.1(6)]
2. Fire dampers are required where ductwork penetrates a one or more hour fire rated wall. They may be omitted in 1hr fire rated walls where the duct penetrating the wall is not greater than 100 square inches, there is no duct opening within five feet of each side of the wall, the duct material is a minimum of 26 gauge steel, and the duct is located above the ceiling. [SMC 610.1 and SBC 705.1.2.2.1]
3. Ductwork penetrating a fire rated horizontal assembly (floor-ceiling, roof-ceiling) must be enclosed within a fire rated shaft (1-hour for 3 stories or less, 2-hours for 4 stories or more). Fire dampers may be used in lieu of a shaft where only one floor is penetrated. [SBC 705.6.4.1, SMC 610.4, 2002 NFPA 90A 5.3.4.1, and 5.3.4.3.1]
4. Ductwork penetrating **non**-fire rated horizontal assemblies (floor-ceiling, roof-ceiling assemblies) must be equipped with a fire damper where the duct connects no more than 3 stories. Ducts connecting 4 or more stories must be enclosed in a 2-hour fire rated shaft. [SBC 705.6.4.3]
5. Provide fire/smoke combination dampers in transfer air grille openings through fire rated walls. A smoke damper is required at transfer openings for unrated walls that must resist the passage of smoke such as a smoke barrier or smoke partition. [NFPA 101 8.3.4.1, 8.4.6.2, SMC 610.3, and 610.1.2(1)]
6. Smoke dampers must be installed in duct penetrations of smoke barriers, unless the duct is a part of a smoke removal system. [SMC 610.3, 2002 NFPA 90A 5.3.5, NFPA 101 8.5.4, and SBC 705.1.2.3]
7. Ceiling dampers or other methods of protecting openings in rated floor- or roof-ceiling assemblies shall comply with the construction details of the tested floor- or roof-ceiling assembly or with listed ceiling air diffusers or listed ceiling dampers. [2002 NFPA 90A 5.4.4.1, SMC 610.2, and SBC 705.6.4.2]

8. Where air ducts and openings for air ducts are used in a fire rated floor or roof-ceiling assembly all materials and the construction of the assembly, including the air duct materials, and the size and protection of the openings, shall conform with the design details of its listing. [2002 NFPA 90A 5.3.3.1]
9. Systems with a fan capacity less than 2,000 CFM and which serve a means of egress must have automatic shutdown. [SMC 406.2]
10. Systems from 2,000 to 15,000 CFM must have a duct mounted smoke detector mounted in the supply duct downstream of all filters (2002 NFPA 90A 6.4.2.1(1)) and in the return air stream prior to any exhausting from the building or mixing with fresh air makeup. [SMC 406.1] These detectors must be wired to a central control panel which is constantly monitored or be wired to a general building alarm. [2002 NFPA 90A 6.4.4]
11. Systems over 15,000 CFM must have duct mounted smoke detector shutdown and smoke dampers in both the supply and return ducts to isolate the fan from the duct system. [2002 NFPA 90A 4.3.9.2] These detectors must be wired to a central control panel which is constantly monitored or be wired to the general building alarm. [2002 NFPA 90A 6.4.4]
12. An exit access corridor cannot be used for return or exhaust from adjoining air conditioned spaces through louvers or other devices mounted in corridor doors, partitions, or ceilings. [SBC 1005.3.1] Except in SBC group I and R occupancies, this may be waived where corridors are equipped smoke detectors arranged to automatically stop supply, return and exhaust and close louvers or other devices mounted within the corridors doors, partitions, or ceilings. [SBC 1005.3.2]
13. Combustible material may not be used within a return air plenum unless it is tested for that application. [2002 NFPA 90A 4.3.10.2.6, SBC 707.2, and SMC 609]
14. Provide information showing how combustion air and ventilation are provided for the room containing fuel fired equipment. [SMC 704 and 2002 NFPA 54 8.3] Show size, free area, location of vents within 12" above finished floor and 12" below ceiling, and ¼" corrosion resistant exterior screen. [SMC 615]
15. Provide kitchen commercial cooking exhaust hood **design intent** information by an engineer competent in the design of cooking exhaust systems who currently has an active Tennessee registration. The design intent must be approved by the State Fire Marshal's Office prior to shop drawings being created and approved by the mechanical engineer of record (processed with the engineer's shop drawing review stamp). [Rule 0780-2-3-.03(1)(a)] See the attached kitchen Hood and Duct Design Intent Ventilation Control and Fire Protection of Commercial Cooking Operations correction list.
16. Complete kitchen commercial cooking exhaust hood and duct system **shop drawings** for removal of grease-laden vapor must comply with 2001 NFPA 96 and SMC 504. Essential features of the system must be submitted and include (1) third party listed exhaust hood(s), (2) listed exhaust and supply fans, (3) fixed fire suppression system details furnished and installed by a Tennessee licensed firm, and (4) exhaust duct system. Shop drawings must be submitted and approved prior to installation after approved by the mechanical engineer of record (processed with the engineer's shop drawing review stamp). [Rule 0780-2-3-.03(3)] Hood suppression systems must meet UL 300. Shop drawing information is generally a stipulation on the plans upon initial approval of the project.
17. Gas lines may not penetrate a four-hour firewall. The areas are considered separate buildings. [1999 Standard Gas Code 310.2.2]

18. Gas piping is not permitted to be installed in concealed spaces unless 1) pipe is joined only by fittings such as elbows, tees, and couplings; 2) tubing is joined by brazing; 3) the fittings are listed for use in concealed space; or 4) where unavoidable to add fittings into the pipe, the pipe shall be reconnected by welding, flanges, or the use of a ground joint union with the nut center-punched to prevent loosening by vibration. Unions, tubing fittings, right and left couplings, bushings, swing joints, and compression couplings made by combinations of fittings shall not be used in concealed locations. [2002 NFPA 54 6.3.2]
19. Gas piping valves must not be located in non accessible spaces or more than six feet away from the appliance being served. [2002 NFPA 54 8.5.4]
20. A separate and individual ventilation system, not part of any other system, must be provided for ventilation of each room or space containing flammable vapors, combustion vapors, noxious gases, and flammable dusts. [SMC 401.2]
21. Chimney, vent, or sanitary sewer exhaust outlets within ten feet of fresh air intakes must be at least two feet higher than the intake. [SMC 405]
22. Chimneys must extend three feet above the roof and at least two feet above any part of the roof within a ten foot radius. [SMC 803.4]
23. The exhaust outlet ducts and ducts serving commercial cooking and processing equipment must terminate outside the building and must be located ten feet from any adjacent building, parking area, adjacent property line, window, door or air intake opening and must be at least ten feet above adjoining grade level and must terminate at least 40 inches above roof surface. [SMC 506.1]
24. Dryer ducts must be installed per the equipment manufacturer's instructions or the methods described in SMC 509.2.
25. Where earthquake loads are applicable according to the SBC, mechanical equipment, piping, and ducts must be designed and installed to resist the seismic forces in the SBC. [SMC 301.4.1]
26. Sleeping rooms in windowless buildings or buildings with non-operable windows or no readily breakable windows must have an engineered smoke control system to provide ventilation. The smoke control system must be connected to emergency power. [SBC 1203.1.2 and NFPA 101 22.4.4.12.2]
27. Windows in building spaces not used for sleeping may have vent opening or smoke shafts in lieu of engineered smoke control. [SBC 409.2.16.2]
28. Suspended unit heaters are not permitted in sleeping areas or in means of egress. [NFPA 101 22.5.2.4]
29. Fuel fired heating equipment must be vented and must take its combustion air from outside. [NFPA 101 22.5.2.5]
30. Portable space heating devices are prohibited. Any heating device other than a central heating plan must be so designed and installed so that combustible material will not be ignited by it or its appurtenances. [NFPA 101 22.5.2.2]

31. If required to have a smoke management system for atria, malls or other large areas, provide a listed exhaust fan to operate at the design conditions of smoke and fire. The system must meet UL category UUKL. Use NFPA 2002 92B, Guide for Smoke Management Systems in Malls, Atria, and Large Areas, 2000 NFPA 92A, Recommended Practice for Smoke-Control Systems, for mechanical smoke control between fire-compartmented building spaces separated by smoke barriers and 2002 NFPA 204, Guide for Smoke and Heat Venting, for gravity venting. This guide is not intended to apply to warehouses, manufacturing facilities, or other similar spaces.

## VIII. FIRE SUPPRESSION

1. Provide sprinkler **design intent** information by an engineer competent in the design of fire protection systems who currently has an active Tennessee registration. The design intent must be approved by the State Fire Marshal's Office prior to shop drawings being created and approved by the fire protection engineer of record (processed with the engineer's shop drawing review stamp). [Rule 0780-2-3-.03(1)(a)] See the attached Sprinkler Design Intent correction list.
2. Complete sprinkler **shop drawings** and associated calculations must be drawn and signed by a Tennessee registered fire protection sprinkler contractor's responsible managing employee. The sprinkler shop drawings and associated calculations must be reviewed and approved by the fire protection engineer of record (processed with the engineer's shop drawing review stamp) only after the design intent has been approved by this office. Shop drawing information is generally a stipulation on the plans upon initial approval of the project. [Rule 0780-2-7-.09 and Office Policy]
3. All piping from the "point of service" including underground used for sprinkler or standpipe system must be installed by a Tennessee registered sprinkler contractor. [Rule 0780-2-7-.08] **Show location of "point of service" for the underground sprinkler piping on the site plan and provide a note stating that the installation must be performed by a Tennessee registered sprinkler contractor.** If there is an existing sprinkler system in the building, a Tennessee registered sprinkler contractor must inspect, test, and provide a letter of acceptance or new inspection report for the existing system showing no deficiencies.
4. Automatic sprinklers are required in all new buildings which are use conditions II through V. [NFPA 101 22.3.5.2] For renovations to existing buildings, see NFPA 101 23.3.5.
5. Buildings in which the highest floor is greater than 30 feet above the lowest level of fire department vehicle access or buildings three or more stories must have a standpipe system. [NFPA 101 22.3.5.5 and SBC 904.2]
6. Class III standpipe (fire department and occupant use) is required for unsprinklered buildings over two stories in height or for buildings 75 feet in height (sprinklered or unsprinklered). [NFPA 101 22.3.5.5(2)] Class 1 standpipe (fire department use) is required for buildings over two stories in height. [NFPA 101 22.3.5.5(1)]
7. Provide a fire protection pump schematic with all component parts and alarms. [1999 NFPA 20]
8. Portable fire extinguishers must be installed in hazardous locations unless the building is fully sprinklered. [NFPA 101 22.3.5.4, NFPA 1 Table 13.6.1.2, and NFPA 10]



**IX. ELECTRICAL**

1. Provide emergency lighting for stairs, aisles, corridors, assembly areas, lobbies, assembly areas, passageways and the **path of egress travel to a public way**. [NFPA 101 7.8.1, 7.9, 28.2.9.1, 30.2.9, and 22.2.9]
2. Emergency lighting must have stand-by power source (NFPA 101 7.9.2, 2002 NFPA 70, Article 700, and SBC 1016.2.1), automatically providing the required illumination in the event of any interruption of normal lighting in areas where emergency lighting is required by SBC 1016 and NFPA 101 7.8, due to any of the following:
  - A. Failure of a public utility or other outside electrical power supply.
  - B. Opening of a circuit breaker or fuse.
  - C. Manual act(s), including accidental opening of a switch controlling normal lighting facilities.
3. Exit signs must be visible from all directions of travel. [NFPA 101 7.10.1.2, 28.2.10, and 30.2.10]
4. Exit signs must have an emergency power source or be a listed self-illuminating type sign. [NFPA 101 7.10.4, SBC 1016.3.5, and 2002 NFPA 70 Article 700.12(e)]
5. Exit signs may be omitted in sleeping areas. [NFPA 22.2.10]
6. Recessed light fixtures in rated ceilings must be protected or be listed for use in a rated assembly. [SBC 705.4]
7. A fire alarm with an emergency power source is required. [SBC 905.1.1, NFPA 101 22.3.4.1.3, and 2002 NFPA 72 4.4.1] Provide fire alarm per 2002 NFPA 72. See Fire Alarm Plan Correction List.
8. Any smoke or heat detection systems or fire suppression systems must be electrically connected to the fire alarm system and fully supervised. [NFPA 101 22.3.5.3]
9. Smoke detectors required by NFPA 101 28.3.4.5 or 30.3.4.5 must be tied into the fire alarm system. [NFPA 101 9.6.2.10 and SBC 905.2]
10. Smoke detectors are required in sleeping areas in use condition IV, V and sleeping rooms occupied by more than four people in condition III unless building is fully sprinklered, and corridors and commons spaces in use condition II and III. [NFPA 101 22.3.4.4 and SBC 409.2.12]
11. In areas not continuously occupied that contain controlling equipment, automatic smoke detection must be provided at each control unit(s) (i.e., fire alarm control panel, etc.). Heat detection is permitted if ambient conditions prohibit installation of smoke detection. [2002 NFPA 72 4.4.5]
12. Where the emergency generator is used for back-up power, it must provide power within ten seconds. [NFPA 101 7.9.1.3]
13. Permanent standby emergency power must be provided for all electrically power-operated sliding doors and power-operated locks, egress lighting, exit signage, lighting at staff stations, communication systems, fire detection and alarms, smoke removal systems and central control and fire pump rooms. Power must be arranged to automatically activate within ten second. [SBC 409.2.18 and NFPA 22.2.11.1.1]

14. Working space(s) in front of electrical equipment is a minimum of three-foot horizontal, six and a half foot vertical and thirty inches minimum width. [2002 NFPA 70 110.26(A)(1-3), Table 110.26(A)(1) and 408.8] Dedicated equipment space(s) is equal to width and depth of the equipment extended from floor to a height six feet above equipment or the structural ceiling whichever is less. [2002 NFPA 70 110.26(F)(1)] Working space(s) may not be used for storage and may not contain ductwork, piping, etc.
15. Electrical outlet boxes located on opposite sides of rated walls must be separated by a horizontal distance of 24 inches. [SBC 705.5.2]
16. Nonmetallic-sheathed cable types NM, NMC, and NMS may not be used in fire resistive components of a building with an assembly occupancy over 50 in a four or more story building, or in Type I or II construction. [2002 NFPA 70 334.10, 334.12, and SBC 706]
17. Provide balanced electrical panel load schedules. [2002 NFPA 70 220.3]
18. Show the following electrical and fire alarm connections (could be by specifications):
  - A. Location of connections of all air handling shutdowns.
  - B. Location of connections to the kitchen hood fire extinguishing system that activates the fire alarm system. Show other required shutdowns in the event the extinguishing system is activated.
  - C. Location of all connections to shunt trip circuit breakers and gas solenoid valves unless a mechanical gas line shut-off is specified.
  - D. Location of flow switch or alarm check valve connection to the general building alarm and central station or fire department.
  - E. Location of supervisory alarm connection from tamper switches on sprinkler system.
19. Electrical equipment rated for 1200 amperes or more and over 6 ft wide, containing overcurrent devices, switching devices, or control devices, there shall be one entrance not less than 32 in. wide and 6½ ft high at each end of the working space. [2002 NFPA 70 110.26(C)(2)] Both entrances shall open in the direction of the egress and be equipped with panic bars, pressure plates, or other devices that are normally latched but open under simple pressure. [2002 NFPA 70 110.26(C)(2) and NFPA 101 7.2.1.2.4]
20. Dry-type transformers installed indoors and rated 112½ kVA or less shall have a separation of at least 12 in. from combustible material unless separated from the combustible material by a fire-resistant, heat-insulated barrier. [2002 NFPA 70 450.21]
21. Individual dry-type transformers of more than 112½ kVA rating shall be installed in a transformer room of minimum 1 hour rated fire-resistant construction, unless specified otherwise in Article 2002 NFPA 70 450.21(B).